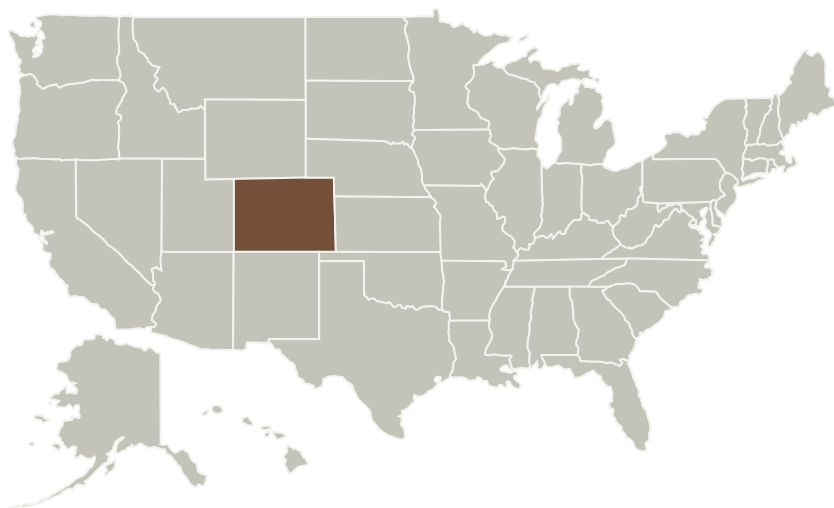## Project Introduction

Growing food in space will not only allow us to extend the length of future missions in space, but also significantly increase the astronauts' well-being. The proposed research focus on the fundamental sensing and manipulation challenges of automating parts of the operations of in-space greenhouses to facilitate tele-operation. Specifically, we are investigating machine learning techniques to extract the growth stage of plants from a combination of volumetric, color, and infrared data, and novel algorithms for manipulating flexible structures using two arms, much like a human gardener does when picking a fruit.

Anticipated Benefits

This project focuses on fundamental challenges associated with the automation of in-space greenhouse operations. Such systems would not only allow us to extend the length of future missions in space, but also significantly increase the astronauts' well-being.

Primary U.S. Work Locations and Key Partners

Organizations Performing Work	Role	Type	Location
University of Colorado Boulder	Supporting Organization	Academia	Boulder, Colorado

Project Image Autonomous Food Production

Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Responsible Program:

Space Technology Research Grants

Primary U.S. Work Locations
Colorado

Images

11476-1363115159804.jpg
Project Image Autonomous Food
Production
*(https://techport.nasa.gov/imag
e/1720)*

Project Website:

https://www.nasa.gov/directorates/spacetech/home/index.html

Project Management

Program Director:

Claudia M Meyer

Program Manager:

Hung D Nguyen

Principal Investigator:

Nikolaus Correll

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**

1	2	3	4	5	6	7	8	9
	Applied Research			Development			Demo & Test	
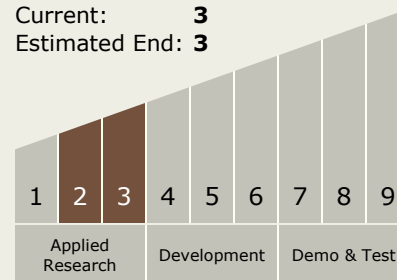
Technology Areas

Primary:

- TX06 Human Health, Life
  Support, and Habitation
  Systems
  └ TX06.6 Human Systems
    Integration
    └ TX06.6.3 Habitability
      and Environment